

## REMARKS

### Summary of the Invention

The present invention features the discovery of the mammalian methionine synthase reductase gene. The methionine synthase reductase gene encodes a protein which catalyzes the reductive methylation of methionine synthase-cob(II)alamin to generate methionine synthase-cob(III)alamin-CH<sub>3</sub>, thereby maintaining methionine synthase in its reduced, activated state. Applicants have discovered that mutations in the methionine synthase reductase gene are associated with neural tube defects, cardiovascular disease, and cancer. The invention provides wild-type and mutant mammalian methionine synthase reductase nucleic acid molecules and their complements.

### Summary of the Office Action

Claims 48, 49, and 56-70 are pending. Claims 48 and 49 are withdrawn from consideration as being drawn to a non-elected invention. Claims 56-67 are allowed. Claim 69 is rejected under 35 U.S.C. § 112, second paragraph, for indefiniteness, while claims 68-70 are rejected under 35 U.S.C. § 112, first paragraph, for lack of written description and enablement. By this reply, Applicants cancel claims 48 and 49, amend claims 68 and 69, and address each of the Examiner's rejections.

### Support for the Amendment

Claim 68 has been amended to replace "having" with "consisting of." Claim 69 has been amended to remove reference to SEQ ID NO: 25 and to clarify that the complement of the

antisense nucleic acid molecule “*encodes a polypeptide* consisting of the sequence set forth in any one of SEQ ID NOs: 52-61” to address the fact that SEQ ID NOs: 52-61 are directed to polypeptide sequences. No new matter is added by the amendment.

Rejections under 35 U.S.C. § 112, second paragraph

Claim 69 is rejected under 35 U.S.C. § 112, second paragraph, for indefiniteness for reciting SEQ ID NO: 25. The Examiner states that “SEQ ID NO: 45 does not comprise SEQ ID NO: 25” (Office Action, p. 2). Applicants have removed reference to SEQ ID NO: 25 in amended claim 69. This rejection can now be withdrawn.

Rejections under 35 U.S.C. § 112, first paragraph

Claims 68-70 are rejected under 35 U.S.C. § 112, first paragraph, for lack of written description and for lack of enablement. The Examiner states:

While the Examiner acknowledges the amendments to the claims, and agrees that fragments of the complete complement of the recited polynucleotides, i.e., SEQ ID NO:1, 41, 43, 45, or 47, are described and enabled by the teachings of the specification, it is noted that the term “having” is considered open language equivalent to the term “comprising.” Therefore, claims 68-70 are directed to a genus of polynucleotides of any function comprising the recited fragments. Such genus is not deemed adequately described since the functions or structures of all the species in that genus have not been disclosed...It is noted that amended the claims to recite “consisting of” instead of “having” would obviate these rejections. (Office Action, p. 4.)

As was suggested by the Examiner in the Office Action and further discussed in a telephone conference with Dr. Todd Armstrong on August 17, 2005, Applicants have amended claim 68 to replace the term “having” with the term “consisting of.” Applicants have also amended claim 69

to clarify that the complement of the antisense nucleic acid molecule “*encodes a polypeptide*” consisting of the sequence set forth in any one of SEQ ID NOs: 52-61” to address the fact that SEQ ID NOs: 52-61 are directed to polypeptide sequences. Applicants believe the amendment to claims 68 and 69 fully addresses the Examiner’s basis for the rejection of claims 68-70. Therefore, this rejection can now be withdrawn.

### CONCLUSION

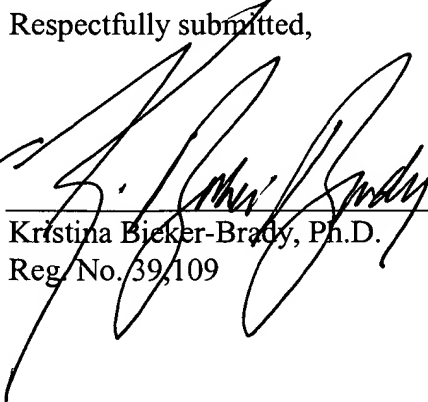
Applicants submit that claims 56-70 are now in condition for allowance, and such action is respectfully requested. Applicants invite the Examiner to contact the undersigned at the telephone number indicated below if there are any issues remaining following entry of the present amendment.

If there are any charges, or any credits, please apply them to Deposit Account No. 03-2095.

Respectfully submitted,

Date:

August 18, 2005

  
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